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Won-Sang Park

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EXAMINER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/699,142	Applicant(s) PARK ET AL.	
	Examiner Jeff Piziali	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-11,15-17,20-25 and 38-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11,15-17,20-25 and 38-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>25 April 2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicants' cooperation is requested in correcting any errors of which applicant may become aware in the figures.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicants' cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Information Disclosure Statement

4. The information disclosure statement filed 25 April 2007 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

A copy of listed Foreign Patent Document "*CN 1260883A*" appears not to have been received by the Office. A copy of Foreign Patent Document "*CN 1143164C*" was received by the Office, but not listed on the information disclosure statement filed 25 April 2007.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-3, 5-11, 15-17, 20-25, and 38-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Independent claims 1, 5, and 38 have all been amended to include the new subject matter of, "*each of the sensing parts having a light-sensitive switching device that is directly connected to one of the data lines*".

The Applicant argues the distinguishing features of this new subject matter: "*FIG. 5 of the subject Application, for example, shows a sensing part. As shown, the second thin film transistor T2 has a terminal that is directly connected to the data line DL. **The second thin film transistor T2 is turned on in response to light** (see Application, page 12, lines 8- 9)... Among all the circuit elements in Hack's photosensor circuit region 12 and current conducting region 14 shown in FIG. 2, the only element that is directly connected to the data line Ds is the transistor*

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32. However, **[Hack's] transistor 32 is not a light-sensitive switching device. Hence, Hack's device is distinguishable from the device of Claims 1, 5, and 38"** (see Pages 8-9 of the Response filed 28 February 2008).

The examiner respectfully notes that the instant "*second thin film transistor [Fig. 5; T2]*" is nowhere disclosed as being "*light-sensitive*".

7. The remaining claims are rejected under 35 U.S.C. 112, first paragraph, as being dependent upon rejected base claims.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-3, 5-11, 15-17, 20-25, and 38-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 1 recites the limitation "*the data lines*" (in line 4). There is insufficient antecedent basis for this limitation in the claim.

11. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter:
*"each of the sensing parts having a light-sensitive switching device that is directly connected to one of the data lines and **generating** an output signal"* (in line 3). It would be unclear to one having ordinary skill in the art what the subject of "**generating**" is intended to be. The data lines? One of the data lines? The switching device? The sensing parts?

12. Claim 1 recites the limitation "**location information**" (in line 5). The lack of a grammatical article (such as "*a*" or "*a plurality of*" or "*the*" or "*said*") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation. For example, it would be unclear to an artisan whether a single element of "**information**" is being claimed; or rather whether a plurality of "**information**" elements are being claimed.

13. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter:
"the sensing part" (in line 3). It would be unclear to one having ordinary skill in the art whether this limitation is common to the earlier claimed "*a plurality of sensing parts*" (in claim 1, line 2); or rather whether this limitation is distinct and independent from the earlier claimed "*a plurality of sensing parts*".

14. Claim 5 recites the limitation "***the data lines***" (in line 4). There is insufficient antecedent basis for this limitation in the claim.

15. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "*each of the sensing parts having a light-sensitive switching device that is directly connected to one of the data lines and **generating** an output signal*" (in line 3). It would be unclear to one having ordinary skill in the art what the subject of "**generating**" is intended to be. The data lines? One of the data lines? The switching device? The sensing parts?

16. Claim 5 recites the limitation "***location information***" (in line 5). The lack of a grammatical article (such as "***a***" or "***a plurality of***" or "***the***" or "***said***") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation. For example, it would be unclear to an artisan whether a single element of "***information***" is being claimed; or rather whether a plurality of "***information***" elements are being claimed.

17. Claim 6 recites the limitation "***the gate lines***" (in line 2). There is insufficient antecedent basis for this limitation in the claim.

18. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a data line***" (in line 2). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***one of the data lines***" (in claim 5, line 4); or rather whether this limitation is distinct and independent from the earlier claimed "***one of the data lines***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a first switching device***" (in line 3). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***a light-sensitive switching device***" (in claim 5, line 3); or rather whether this limitation is distinct and independent from the earlier claimed "***a light-sensitive switching device***".

19. Claim 6 recites the limitation "***the data line***" (in line 4). There is insufficient antecedent basis for this limitation in the claim. Which data line? The one from claim 5 or claim 6?

20. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a first signal***" (in line 5) and "***a second signal***" (in line 8). It would be unclear to one having

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ordinary skill in the art whether one of these limitations is identical to the earlier claimed "***an analog signal***" (in claim 5, line 4); or rather whether each limitation is distinct and independent from the earlier claimed "***an analog signal***".

21. Claim 9 recites the limitations: "***a second gate electrode***" (in line 2); "***a second source electrode***" (in line 3); and "***a second drain electrode***" (in line 4). There is insufficient antecedent basis for these limitations in the claim. No first gate, source, or drain electrodes have been claimed.

22. Claim 10 recites the limitations: "***a third gate electrode***" (in line 2); "***a third source electrode***" (in line 3);. and "***a third drain electrode***" (in line 4). There is insufficient antecedent basis for these limitations in the claim. No first gate, source, or drain electrodes have been claimed.

23. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***the first switching device, the second switching device and the third switching device correspond to an amorphous-silicon thin film transistor***" (in line 2). It would be unclear to one having ordinary skill in the art whether "***the first switching device, the second switching device and the third switching device correspond to a single identical amorphous-silicon thin film***

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transistor" (1 transistor); or rather whether "*the first switching device, the second switching device and the third switching device each correspond to a distinct amorphous-silicon thin film transistor*" (3 transistors).

24. Claim 16 recites the limitation "*exposing*" (in line 2). There is insufficient antecedent basis for this limitation in the claim. Exposed to what?

25. Claim 20 recites the limitations: "*a second source electrode*" (in line 2) and "*a second drain electrode*" (in line 3). No first source or drain electrodes have been claimed.

26. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "*a digital signal*" (in line 4). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "*a digital signal*" (in claim 5, line 8); or rather whether each limitation is distinct and independent from the earlier claimed "*a digital signal*".

An omitted structural cooperative relationship results from the claimed subject matter: "*a second driving part to providing the connecting part with the first control signal and receive the digital signal from the connecting part to output the second control signal*" (in line 7). It would be unclear to one having ordinary skill in the art what the subject of "*receive*" is intended to be.

27. Claim 38 recites the limitation "**the data lines**" (in line 5). There is insufficient antecedent basis for this limitation in the claim.

28. Claim 38 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "*each of the sensing parts having a light-sensitive switching device that is directly connected to one of the data lines and **generating** an output signal*" (in line 5). It would be unclear to one having ordinary skill in the art what the subject of "**generating**" is intended to be. The data lines? One of the data lines? The switching device? The sensing parts?

29. Claim 38 recites the limitation "**location information**" (in line 6). The lack of a grammatical article (such as "**a**" or "**a plurality of**" or "**the**" or "**said**") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation. For example, it would be unclear to an artisan whether a single element of "**information**" is being claimed; or rather whether a plurality of "**information**" elements are being claimed.

30. Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a plurality of pixels***" (in line 3). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***a plurality of pixels***" (in claim 38, line 3); or rather whether this limitation is distinct and independent from the earlier claimed "***a plurality of pixels***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a plurality of sensing parts***" (in line 3). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***a plurality of sensing parts***" (in claim 38, line 4); or rather whether this limitation is distinct and independent from the earlier claimed "***a plurality of sensing parts***".

31. Claim 39 recites the limitation "***the gate lines***" (in line 4). There is insufficient antecedent basis for this limitation in the claim.

32. Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a data line***" (in line 4). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***one of the data lines***" (in claim 38, line 5); or rather whether this limitation is distinct and independent from the earlier claimed "***one of the data lines***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a first switching device***" (in line 5). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***a light-sensitive switching device***" (in claim 38, line 4); or rather whether this limitation is distinct and independent from the earlier claimed "***a light-sensitive switching device***".

33. Claim 39 recites the limitation "***exposed***" (in line 11). There is insufficient antecedent basis for this limitation in the claim. Exposed to what?

34. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***a gate line***" (in line 3). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***a gate line***" (in claim 39, line 4); or rather whether this limitation is distinct and independent from the earlier claimed "***a gate line***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a first sensor line***" (in line 5). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***a first sensor line***" (in claim 39, line 6); or rather whether this limitation is distinct and independent from the earlier claimed "***a first sensor line***".

An omitted structural cooperative relationship results from the claimed subject matter: "***a second sensor line***" (in line 16). It would be unclear to one having ordinary skill in the art whether this limitation is identical to the earlier claimed "***a second sensor line***" (in claim 39, line 6); or rather whether this limitation is distinct and independent from the earlier claimed "***a second sensor line***".

35. Claim 40 recites the limitation "***the portion***" (in line 10). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art whether this limitation intends to refer to the earlier claimed "***a transmission portion***" or "***a reflection portion***" (in claim 39, lines 10-11).

36. Claim 40 recites the limitation "***the second electrode***" (in line 10). There is insufficient antecedent basis for this limitation in the claim. It would be unclear to one having ordinary skill in the art whether this limitation intends to refer to "***a second gate electrode***" (in line 5), "***a transparent electrode***" (in claim 39, line 8), or "***a reflective electrode***" (in claim 39, line 10).

37. The remaining claims are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon rejected base claims.

Claim Rejections - 35 USC § 102

38. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

39. Claims 1-3, 5-11, 15-17, 20-25, and 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by *Hack et al (US 5,204,661 A)*.

Regarding claim 1, *Hack* discloses a liquid crystal display panel (see the entire document, including Column 3, Lines 37-45) comprising:

a first substrate including a plurality of pixels [e.g., Fig. 2; 42] and a plurality of sensing parts [e.g., Fig. 2; 12 & 14],

each of the sensing parts having a light-sensitive switching device [e.g., Fig. 2; 32 & 40] that is directly connected to one of the data lines and

generating an output signal [e.g., Fig. 2; 28] containing location information in response to an input signal [e.g., Fig. 2; via A_n & D_s] (see the entire document, including Column 4, Line 52 - Column 5, Line 64),

the location information indicating a location where the input signal is inputted;

a second substrate connected to the first substrate,

the second substrate facing the first substrate; and

a liquid crystal layer interposed between the first substrate and the second substrate (see the entire document, including Column 5, Line 43 - Column 6, Line 12).

Regarding claim 2, *Hack* discloses the input signal corresponds to an incident light, the incident light passing through the second substrate to reach the sensing part (see the entire

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document, including Column 6, Lines 33-46), and the sensing part outputting an analog signal in response to the incident light (see the entire document, including Column 9, Lines 11-12).

Regarding claim 3, **Hack** discloses the incident light is an infrared light (see the entire document, including Column 11, Line 39).

Regarding claim 5, this claim is rejected by the reasoning applied in rejecting claim 1; furthermore, **Hack** discloses a liquid crystal display device (see the entire document, including Column 3, Lines 37-45) comprising:

a liquid crystal display panel (see the entire document, including Column 5, Line 43 - Column 6, Line 12) including a plurality of pixels [e.g., Fig. 2; 42] and a plurality of sensing parts [e.g., Fig. 2; 12 & 14],

each of the sensing parts having a light-sensitive switching device [e.g., Fig. 2; 32 & 40] that is directly connected to one of the data lines and

generating an analog signal (see the entire document, including Column 9, Lines 11-12) containing location information in response to an incident light (see the entire document, including Column 6, Lines 33-46),

the location information indicating a location where the light enters; and

a control part [e.g., Fig. 1; 8] receiving the analog signal and transforming the analog signal into a digital signal,

the liquid crystal display device being controlled in response to the digital signal (see the entire document, including Column 4, Line 52 - Column 5, Line 64).

Regarding claim 6, **Hack** discloses each of the pixels includes a gate line [e.g., Fig. 2; A_n] this is one of the gate lines, a data line [e.g., Fig. 2; D_s] that is one of the data lines, a first switching device [e.g., Fig. 2; 40] electrically connected to the gate line and the data line, and a pixel electrode [e.g., Fig. 2; @ 42] electrically connected to the first switching device (see the entire document, including Column 5, Lines 43-64).

Regarding claim 7, **Hack** discloses each of the light sensitive switching device is a second switching [e.g., Fig. 2; 32] device that is turned on in response to the incident light to output a first signal that is received from the data line, each of the sensing parts further comprising:

- a third switching device [e.g., Fig. 2; 30] outputting the first signal provided from the second switching device in response to a second signal applied to the gate line; and
- a first sensor line [e.g., Fig. 2; 28] receiving the first signal from the third switching device and transmitting the first signal to the control part (see the entire document, including Column 6, Lines 14-68).

Regarding claim 8, **Hack** discloses each of the sensing parts further comprises a second sensor line [e.g., Fig. 2; A_n] (see the entire document, including Column 5, Lines 19-64).

Regarding claim 9, **Hack** discloses the second switching device includes a second gate electrode diverging from the second sensor line, a second source electrode diverging from the

data line, and a second drain electrode being electrically connected to the third switching device (see the entire document, including Fig. 2; Column 5, Lines 19-64).

Regarding claim 10, **Hack** discloses the third switching device includes a third gate electrode diverging from the gate line, a third source electrode being electrically connected to the second switching device, and a third drain electrode being electrically connected to the first sensor line (see the entire document, including Fig. 2; Column 5, Lines 19-64).

Regarding claim 11, **Hack** discloses the first switching device, the second switching device and the third switching device correspond to an amorphous-silicon thin film transistor (see the entire document, including Column 11, Lines 5-19).

Regarding claim 15, **Hack** discloses the pixel electrode comprises a transparent electrode and a reflective electrode including a transmission portion and a reflection portion, the reflective electrode facing the transparent electrode (see the entire document, including Column 4, Line 52 - Column 5, Line 29).

Regarding claim 16, **Hack** discloses the reflective electrode comprises an opening window exposing the sensing part, the incident light passing through the opening window and arriving at the sensing part (see the entire document, including Column 7, Line 35 - Column 8, Line 18).

Regarding claim 17, **Hack** discloses the incident light is an infrared light (see the entire document, including Column 11, Line 39).

Regarding claim 20, **Hack** discloses a sensor line, a second source electrode and a second drain electrode of the second switching device comprise a transparent and electrically conductive material (see the entire document, including Column 4, Line 52 - Column 5, Line 29).

Regarding claim 21, **Hack** discloses the pixel electrode comprises a transparent electrode and a reflective electrode including a transmission portion and a reflection portion, the reflective electrode facing the transparent electrode (see the entire document, including Column 5, Lines 43-64 & Column 11, Lines 5-19).

Regarding claim 22, **Hack** discloses the reflective electrode comprises an opening window exposing the light-sensitive switching device, the infrared light (see the entire document, including Column 11, Line 39) passing through the opening window and arriving at the light-sensitive switching device (see the entire document, including Column 5, Lines 43-64 & Column 11, Lines 5-19).

Regarding claim 23, **Hack** discloses the control part comprises: a connecting part (see the entire document, including Fig. 1) to receive the analog signal and transform the analog signal into a digital signal in response to a first control signal; a first driving part [e.g., Fig. 1; 8] to drive the liquid crystal display panel in response to a second control signal; and a second driving

part [e.g., Fig. 1; 6] to providing the connecting part with the first control signal and receive the digital signal from the connecting part to output the second control signal (see the entire document, including Column 4, Line 20 - Column 5, Line 42).

Regarding claim 24, **Hack** discloses the first driving part is formed in a chip, the chip being mounted on the liquid crystal display panel, the chip having the connecting part therein (see the entire document, including Column 4, Lines 21-51).

Regarding claim 25, **Hack** discloses the first driving part and the connecting part are integrally formed in the liquid crystal display panel (see the entire document, including Figs. 1 & 2; Column 4, Line 20 - Column 5, Line 42).

Regarding claim 38, this claim is rejected by the reasoning applied in rejecting claims 1 and 5; furthermore, **Hack** discloses method of manufacturing a liquid crystal display device (see the entire document, including Column 3, Lines 37-45) comprising:

forming a first substrate including a plurality of pixels [e.g., Fig. 2; 42] and a plurality of sensing parts [e.g., Fig. 2; 12 & 14],

each of the sensing parts having a light-sensitive switching device [e.g., Fig. 2; 32 & 40] that is directly connected to one of the data lines and

generating an output signal [e.g., Fig. 2; 28] containing location information in response to an input signal [e.g., Fig. 2; via A_n & D_s] (see the entire document, including Column 4, Line 52 - Column 5, Line 64),

the location information indicating a location where the input signal is inputted;
forming a second substrate;
combining the first substrate and the second substrate; and
forming a liquid crystal layer between the first substrate and the second substrate (see the entire document, including Column 5, Line 43 - Column 6, Line 12).

Regarding claim 39, **Hack** discloses the first substrate is formed by:
forming a plurality of pixels [e.g., Fig. 2; 42] and a plurality of sensing parts [e.g., Fig. 2; 12 & 14],

each of the pixels including a gate line [e.g., Fig. 2; A_n] that is one of the gate lines, a data line [e.g., Fig. 2; D_s] and a first switching device [e.g., Fig. 2; 40],

each of the sensing parts including a first sensor line [e.g., Fig. 2; 28], a second sensor line [e.g., Fig. 2; A_n] that is one of the data lines, a second switching device [e.g., Fig. 2; 32] and a third switching device [e.g., Fig. 2; 30] that includes the light sensitive device (see the entire document, including Column 5, Lines 43-64);

forming a transparent electrode being electrically connected to the first switching device;
and forming a reflective electrode including a transmission portion and a reflection portion,
the second switching device being exposed via the transmission portion (see the entire document, including Column 6, Lines 14-68).

Regarding claim 40, **Hack** discloses the pixels and the sensing parts are formed by:

forming a first conductive pattern including a gate line [e.g., Fig. 2; A_n], a first gate electrode of the first switching device, a third gate electrode of the third switching device, a first sensor line [e.g., Fig. 2; 28] and a second gate electrode of the second switching device, the first gate electrode and the third gate electrode diverging from the gate line, the second gate electrode diverging from the first sensor line;

forming a gate insulation layer on the first conductive pattern;

forming a semiconductor layer on a portion of the gate insulation layer,

the portion being disposed on the first gate electrode, the second electrode and the third gate electrode; and

forming a second conductive pattern on the semiconductor layer and the gate insulation layer, the second conductive pattern including the data line, a first source electrode and a first drain electrode of the first switching device, a second source electrode and a second drain electrode of the second switching device, a second sensor line, and a third source electrode and a third drain electrode of the third switching device, the first source electrode and the second source electrode diverging from the data line, the third source electrode diverging from the second sensor line (see the entire document, including Column 5, Lines 4-64).

Response to Arguments

40. Applicant's arguments filed 28 February 2008 have been fully considered but they are not persuasive.

The Applicant contends, "*Claims 1, 5, and 38 are patentable over Hack at least because they recite that '... each of the sensing parts [has] a light-sensitive switching device that is directly connected to one of the data lines ' FIG. 5 of the subject Application, for example, shows a sensing part. As shown, the second thin film transistor T2 has a terminal that is directly connected to the data line DL. The second thin film transistor T2 is turned on in response to light (see Application, page 12, lines 8- 9).*

"The Office Action of May 3, 2007 ('the Office Action') reads the sensing part as corresponding to the photosensor circuit region 12 and the current conducting region 14 in Hack's FIG. 2 (see the Office Action, page 4). The data line in Hack's FIG. 2 is designated as Ds. Among all the circuit elements in Hack's photosensor circuit region 12 and current conducting region 14 shown in FIG. 2, the only element that is directly connected to the data line Ds is the transistor 32. However, transistor 32 is not a light-sensitive switching device. Hence, Hack's device is distinguishable from the device of Claims 1, 5, and 38" (see Pages 8-9 of the Response filed 28 February 2008). However, the examiner respectfully disagrees.

***Hack** explains, "Assume first that **light has been incident on the photoelectric sensing means 16** at some point during this time. The effect that the incident light will have will depend on the nature of the photoelectric sensing means 16, but for the purposes of explanation it will be assumed that the incident light renders means 16 conductive. This will create a current path between the high voltage of the gate of transistor 26 and the low voltage of line A.sub.n+1. The stored charge between the gate and channel of transistor 26 will be discharged, bringing the gate and first and second channel electrodes to about the same voltage. This will render the*

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*channel of transistor 26 essentially nonconductive. The role of capacitor 22 is to weakly couple the row address line A_n to the gate of transistor 30. Thus, when A_n is at the high voltage state, the gate of transistor 30 will also be at that high voltage state due to capacitive coupling through capacitor 22. Since transistor 26 is essentially an open circuit between nodes 24 and 28 (although there will be a degree of current leakage inherent in each of the transistors), there is no direct current path between the gate of transistor 30 and the low (or ground) voltage of the column data line D_s . This presents a sufficiently high potential difference between the gate of transistor 30 and a first of its channel electrodes to thereby render its channel conductive. **The channel of transistor 32 (described in further detail below) will also be conductive since its gate is at the high voltage of row address line A_n and a first of its channel electrodes is at the low voltage of column data line D_s . Therefore, a current path is provided between row address line A_n and column data line D_s . A poll of column data line D_s at this point would show a current flow (typically on the order of microamps) for a predetermined time period (typically on the order of microseconds), which would be interpreted by appropriate circuitry (not shown) as an indication that sufficient light had been incident on cell 10.***

*"If, however, **light has not been incident on the photoelectric sensing means 16** during the sensor mode time between the initializing of the circuit and the raising of the voltage on row address line A_n , the gate-to-channel potential difference of transistor 26 remains high. The channel of transistor 26 is then conductive. Since this allows the gate and a first channel electrode of transistor 30 to be at approximately the same low voltage, the channel of transistor 30 is nonconductive. **This blocks the only effective current path between row address line A_n and column data line D_s , since capacitor 22 does not pass D.C. current. A poll of column data***

line D_s at this point would show very low current flow, which would be interpreted by appropriate circuitry (not shown) as an indication that insufficient light had been incident on cell 10" (see Column 7, Line 34 - Column 8, Line 18).

As such, **Hack** discloses a liquid crystal display panel (see the entire document, including Column 3, Lines 37-45) comprising:

a first substrate (see the entire document, including Column 5, Line 65 - Column 6, Line 12) including a plurality of pixels [e.g., Fig. 2; 42] and a plurality of sensing parts [e.g., Fig. 2; 12 & 14],

each of the sensing parts [e.g., Fig. 2; 12 & 14] having a light-sensitive switching device [e.g., Fig. 2; 32 & 40] that is directly connected to one of the data lines [e.g., Fig. 2; D_s] and generating an output signal [e.g., Fig. 2; 28] containing location information in response to an input signal [e.g., Fig. 2; via D_s],

the location information indicating a location where the input signal is inputted;

a second substrate connected to the first substrate,

the second substrate facing the first substrate; and

a liquid crystal layer interposed between the first substrate and the second substrate (see the entire document, including Column 4, Line 52 - Column 5, Line 64).

Applicant's arguments with respect to claims 1-3, 5-11, 15-17, 20-25, and 38-40 have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

41. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
3 June 2008